

CURRICULUM VITAE for JOHN E. FOWLER

September 2021

RANK: Professor

MAILING ADDRESS: Department of Botany and Plant Pathology
Oregon State University
2082 Cordley Hall
Corvallis, OR 97331-2902

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A. EDUCATION AND EMPLOYMENT

EDUCATION:

1994 Ph.D., Genetics, University of California, Berkeley. Berkeley, CA.
1987 B.S., Genetics, *Summa Cum Laude* with Highest Honors, University of Georgia.
Athens, GA.

POSITIONS HELD:

Apr 2018-present Associate Head; Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR
Feb-Mar 2018 Interim Head; Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR
Sep '17-Jan '18 Associate Head; Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR
2016-present Professor; Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR
2004-2016 Associate Professor; Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR
2005-2006 National Research Council Senior Research Associate – EPA, Western Ecology Division, Corvallis, OR (Sabbatical)
1997-2004 Assistant Professor; Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR
1994-1997 Post-doctoral Research Associate. Department of Biology, University of North Carolina at Chapel Hill (Advisor: Dr. Ralph Quatrano)
1996 Instructor, Genetics. Department of Biology, University of North Carolina at Chapel Hill
1987-1994 Graduate Research/Teaching Assistant. Graduate Group in Genetics, University of California, Berkeley (Advisor: Dr. Michael Freeling)

APPOINTMENT: 12 month

FTE DISTRIBUTION: 0.75 FTE Center for Genome Research and Biocomputing
0.25 FTE College of Agricultural Sciences

PRINCIPAL DUTIES IN PRESENT POSITION:

1. Maintain a research program in plant cell and developmental biology.
2. Teach in Botany and Plant Pathology and "genome biology"-related curriculum.
3. Train and advise undergraduate and graduate students, postdocs and other researchers.
4. Provide service to the Department, institution and profession (e.g., participation in committees, manuscript and proposal reviews, and public outreach).
5. Provide leadership for the Department and support for the Department Head as Associate Head of the Department, including as Chair of the Departmental Curriculum Committee and primary liaison to the Office of Academic Programs and Assessment.

OTHER OSU PROGRAM AND DEPARTMENT AFFILIATIONS:

Center for Quantitative Life Sciences, Faculty Member
Molecular and Cell Biology Program, Graduate Faculty
Biological Data Sciences Graduate Minor, Faculty

B. TEACHING, ADVISING AND OTHER ASSIGNMENTS

1. INSTRUCTIONAL SUMMARY

Current Teaching Responsibilities:

- 1) BI 223, Principles of Biology: Populations (4 cr). 50% lecture responsibility. This large class is the last quarter of a year-long introductory biology sequence that serves students across the sciences. It introduces many fundamental concepts (practice of science, origin of life, evolution, populations, phylogeny) and emphasizes the diversity of life, from prokaryotes to plants, fungi, animals and other eukaryotes. BI 223 provides a foundation for subjects covered in upper division courses (e.g., biochemistry, physiology, ecology, genetics). I will give the same lecture twice a day to ~500 students during the Spring quarter.
- 2) BOT/BDS 474/574, Introduction to Genome Biology (3 cr.). 100% responsibility. This recently-developed upper-level undergraduate/graduate course provides a conceptual foundation for more advanced genome-oriented courses. The course explores how genomes underlie and influence biological phenomena, across the diversity of life, from prokaryotic microbes to eukaryotic multicellular organisms. Central molecular mechanisms and experimental approaches – including recent technological advances and genome-wide assays that generate large datasets – across an evolutionarily diverse set of species (prokaryotes, fungi, plants, animals) are covered. Writing and discussion skills, based on primary literature, are emphasized.

b. Guest Lectures and Other Teaching:

Faculty Teaching Panel, BI 21X TA Training, Invited Member, Winter 2009, 2010, 2011, 2013, 2014, 2016, 2017

Faculty Panel for U-Succeed Course for STEM Leaders, 2016

MCB 525, Techniques in Molecular & Cellular Biology, Fall 2013 – Lecture: Advanced Confocal Microscopy Applications – Live Cell Imaging

MCB 511, Research Perspectives in Molecular & Cellular Biology, Fall 1997-2000, 2005-06, 2008-09 – Lecture: Cell Polarity and Development in Plants

BPP 508, Graduate Student Orientation, Fall 2006 – Lecture: Grant Proposals & Graduate Fellowships

MCB 525, Techniques in Molecular & Cellular Biology, Fall 2002, 2003 – Lecture: The Yeast Two-Hybrid System

MCB 607, Scientific Skills and Ethics, Spring 2000, Spring 2002 – Class Discussion: Scientific Skills and Ethics

BB 650, Cellular Mechanics, Fall 1998 – Lecture: Establishment of Cell Polarity

Courses Developed:

1) *MCB 553, Structure and Function of Eukaryotic Cells (3 cr)*. Developed and first taught in Winter 1998; beginning in Winter 1999, responsibility shared with Dahong Zhang (Zoology). No longer taught, as of Winter 2008. Content combined into MCB 556.

2a) *MCB 556, Cell Signaling and Development (3 cr)*. Cross-listed as GEN 456/556. Developed

and first taught in Spring 1998, as part of a team of five instructors; beginning in Spring 1999, 50% responsibility shared with Dahong Zhang (Zoology). Revised as of Spring 2008, see 2b.

2b) *MCB 556, Cell and Developmental Biology (4 cr)*. Cross-listed as GEN 456/556. Generated an approved Category II proposal to revise course (Fall 2007), expanding it to 4 credits, and to move topics from the former MCB 553 course into this course. 50% responsibility shared with Dahong Zhang (Zoology).

3) *BI 102, General Biology (4 cr)*. Lectures on Genetics, Evolution and Behavior for non-science majors. Developed and first taught in 2002, continued through 2005; 50% responsibility shared with Lesley Blair (Biology). Lecture given twice each day.

4) *BI 211, Principles of Biology (4 cr)*. Lectures introducing the Diversity and Biology of Prokaryotes, Protists, Plants & Fungi for science majors. First taught in 2007; 50% responsibility for lectures, shared with Andy Blaustein (Zoology). Lecture given twice each day.

5) *MCB 555, Genome Expression and Regulation (5 cr)*. Revised and first taught in Winter 2015, as part of a team of four instructors; served as coordinator, as well as teaching 40% of the lectures (with M. Schuster, Microbiology and C. Kioussi, Pharmacy).

6) *BOT/BDS 474X/574X, Introduction to Genome Biology (3 cr)*. Developed in 2020, submitted to CIM as an experimental course. Upper division undergraduate course / first year graduate course, covers the biological and molecular underpinnings of modern genome-driven biological science. Prepares students for more in-depth upper division genomics courses.

7) *BI 223, Principles of Biology: Populations (4 cr)*. Worked with the BI 22x team to develop course in 2018-2019. First taught in Spring 2021 (remote, during COVID pandemic), as the third course in the newly revised BI 22x series. This series is the core on-campus requirement for undergraduates in a range of biology-related majors.

Curriculum committee service:

Co-Chair (with Marc Curtis) – Botany Curriculum Committee, also Liaison to the BDS (Biological Data Sciences) Curriculum Committee (2018-present)

Co-Chair (with Brett Tyler) – rMCB Visioning Group, for the Graduate School (2018-2020)

BI 22X Development Committee, 2018-2020

BI 20X Development Committee, Spring-Fall 2014

Molecular and Cellular Biology Curriculum Committee, Winter 1999-2018

Botany and Plant Pathology Curriculum Committee, 2005-2006, 2009-2010

Plant Sciences Curriculum Committee, Chair, Winter-Spring 2007

BPP Ad Hoc Committee on Molecular Course Offerings in Fungal and Plant Science, 2000-2001

Plant Molecular Biology Courses (Subcommittee of Ad Hoc Committee above), Chair, 2000-2001

d. Students, Postdoctoral and Research Assistant Trainees

I advise graduate and undergraduate students, as well as Research Associates, Postdoctoral Trainees, Visiting Scholars and a Faculty Research Assistant. These have been supported by a variety of external grants, including those from the NSF, USDA-NIFA and EPA, as well as local funding programs (e.g., BPP's Ernest and Pauline Jaworski Fund, the HHMI-supported Summer Undergraduate Research Program).

GRADUATE STUDENTS

Served as Major Professor:

Harrison Flieg, Ph.D., Summer 2021 – present, Botany & Plant Pathology
Matt Warman, Ph.D., Fall 2015 – Spring 2020, Botany and Plant Pathology
Caity Smyth, Ph.D., Winter 2011 – Summer 2016, Botany and Plant Pathology
Chintan Joshi, M.S., Spring 2009 – Fall 2010, Molecular and Cellular Biology,
Professional Science Masters Program in Applied Biotechnology
Ann Ketter, M.S., Winter 2005 – Spring 2008, Molecular and Cellular Biology
Rex Cole, Ph.D., Spring 2002 – Winter 2007, Molecular and Cellular Biology
Kirstin Arthur, Ph.D., Spring 2000 – Fall 2004, Molecular and Cellular Biology
Todd Christensen, M.S., Spring 1998 – Summer 2004. Botany and Plant Pathology

Rotations and supervision of students from other labs:

Pallavi Phatale, rotation, Winter 2008, Botany and Plant Pathology
Kirk Findlay, supervision, Summer 2004 – Winter 2005, Botany and Plant Pathology
Ann Ketter, rotation, Summer 2002, Botany and Plant Pathology
Jie Hao, rotation, Winter 2001, Molecular and Cellular Biology
Owusuwaa Owusu, supervised, Summer 1999, Botany and Plant Pathology
Pascale Williams, supervised, Summer 1999, Molecular and Cellular Biology
Alberto Napuli, rotation, Spring 1999, Molecular and Cellular Biology
Kristin Latham, rotation, Spring 1999, Molecular and Cellular Biology

Graduate Committee Memberships:

Paul Skillin, M.S., 2021-present, Horticulture
Tanner Jefferson, Ph.D., 2021-present, Botany & Plant Pathology
Diana Ruggiero, Ph.D, 2021 - present, Botany & Plant Pathology
Nathan Ryan, M.S., 2020- present, Forest Ecosystems & Society
Rachel Baschieri, Ph.D, 2020 – present, Botany & Plant Pathology
Zach Bright, M.S., 2020 – present, Botany & Plant Pathology
Tori Colvin, Ph.D., 2020 – present, Environmental & Molecular Toxicology
Omilani Femi, Ph.D., 2020 – present, Horticulture
Mesut Diker, Ph.D., 2020 – present, Horticulture
Michael Nagle, Ph.D., 2017 – present, Molecular and Cellular Biology

Valerie Fraser, Ph.D., 2016 - 2021, Molecular and Cellular Biology
 Estefania Elorriaga, Ph.D., 2013 – 2020, Molecular and Cellular Biology
 Haiwei Lu, Ph.D., 2013 – 2019, Molecular and Cellular Biology
 Noor Al-Bader, Ph.D., 2015 – 2019, Molecular and Cellular Biology
 Kai Tao, Ph.D., 2013 – 2018, Molecular and Cellular Biology
 Mitra Ansari, Ph.D., 2013 – 2018, Molecular and Cellular Biology
 Sheila Kitchen, Ph.D., 2011 – 2016, Zoology
 Khadidiatou Sall, Ph.D., 2014 – 2017, Molecular and Cellular Biology
 Kevin Kirkemo, M.S., 2013, Molecular and Cellular Biology
 Yunhan Duan, Ph.D., 2010 – 2013, Molecular and Cellular Biology
 Kateryna Kyrylkova, Ph.D., 2010 – 2014, Pharmacy
 Jason Cumbie, Ph.D., 2009 – 2013, Molecular and Cellular Biology
 Kuo-Fu Tseng, Ph.D., 2009 – 2013, Molecular and Cellular Biology
 Erin Bredeweg, Ph.D., 2008 – 2014, Molecular and Cellular Biology
 Brian Gilbert, Ph.D., 2006 – 2012, Molecular and Cellular Biology
 Sangeet Lal, Ph.D., 2006 – 2010, Biochemistry and Biophysics
 Anand Venkataraman, Ph.D., 2006 – 2009, Molecular and Cellular Biology
 Yu-Ping Liu, Ph.D., 2008 – 2009, Botany and Plant Pathology
 Wanli Lu, Ph.D., 2007 – 2008, Molecular and Cellular Biology
 Andrea Christiansen, M.S., 2006 – 2008, Molecular and Cellular Biology
 Elisha Wood-Charlson, Ph.D., 2004 – 2008, Zoology
 Karen Hippchen, M.S., 2005 – 2007, Genetics
 Nate Miller, Ph.D., 2005 – 2007, Botany and Plant Pathology
 Melanie Poort, Ph.D., 2003 – 2007, Molecular and Cellular Biology
 Wei Chen, Ph.D., 2001 – 2007, Zoology
 E.J. Etherington, M.S., 2007, Molecular and Cellular Biology, PSM Program
 Jing Yang, Ph.D., 2005 – 2006, Pharmacy
 Jason Nunes, M.S., 2004 – 2006, Genetics
 Jennifer McCullar, Ph.D., 2000 – 2005, Molecular and Cellular Biology/Pharmacy
 Kristin Latham, Ph.D., 1999 – 2005, Molecular and Cellular Biology/Zoology
 Owusuwaa Owusu, Ph.D., 1999 – 2004, Biochemistry and Biophysics
 Ann Ketter, M.S., 2000 – 2002, Horticulture
 Kirk Findlay, Ph.D., 2003 – 2005, Botany and Plant Pathology
 Virginia Balbi, Ph.D., 1999 – 2002, Plant Physiology/Botany and Plant Pathology
 Ryan Preston, Ph.D., 1999 – 2002, Biochemistry and Biophysics
 Marc Curtis, Ph.D., 1998 – 2003, Molecular and Cellular Biology
 Drew Sellers, Ph.D., 1998 – 2000, Molecular and Cellular Biology
 Corey Gunterman, Ph.D., 1999 – 2000, Molecular and Cellular Biology/Zoology

Graduate School Representative:

Lapacek, Valerie, PhD, 2018 – present, Zoology
 Ha, Anh, Ph.D., 2015 – 2020, Molecular and Cellular Biology
 Laura Holden, M.S., 2016 - 2018, Environmental and Molecular Toxicology
 McCarthy, Christy, M.S., 2015 - 2016, Crop and Soil Science

Zhixing Wang, Ph.D., 2008 – 2012, Pharmacy
Stephanie Bollman, Ph.D., 2003 – 2008, Genetics
Sarocho Kingkeohoi, Ph.D., 1999 – 2002, Environment and Molecular Toxicology
Vidyadhar Karmarkar, M.S., 2003, Crop Science
Jung Suh, Ph.D., 1998 – 2003, Biochemistry and Biophysics
Anne Bernhard, Ph.D., 1998 – 2000, Microbiology
Lisa Seter, M.S., 1998, Soil Science

UNDERGRADUATE RESEARCH:

Michelle Majstorich (Ecampus), Fall 2021 – present
Luis Garcia-Lamas, Winter 2021 - present

- Co-mentored with Dr. Duo Jiang, Statistics
- SURE Awardee (COS), Summer 2021

Andrea Perez, Winter 2021 – Summer 2021

- Participant, STEM Leaders Program

Dan Hickey, Summer 2021 - present
Cynthia Waite, Winter 2020 - present

- CAS Continuing Researcher Grant, Summer 2020

Kale'a Galbreath, Winter 2020 – Spring 2020
Rogue Hartman, Honor's Thesis, Fall 2017 – 2020

- CAS Continuing Researcher Grant, Summer 2019

Brooke Hamilton, Fall 2017 – 2019
Quinn DeYoung, Spring 2015 – Spring 2017
Cesar Juarez, Spring 2015 – Summer 2016

- Ernest and Pauline Jaworski Fund for Summer Research Experiences for Underserved Undergraduates in Plant Science (Summer 2015)
- Travel Scholarship to present a poster at the 2015 SACNAS National Conference, Washington, D.C.

Sean Colebrook, Winter 2014 – present

- Awarded MaGNET Travel Award, full funding (travel, food, accommodations, registration) to present a poster at the 2015 Annual Maize Genetics Conference
- Graduation Spring 2015 as an OSU Research Fellow

Danielle Goodrich, Spring 2011 – Spring 2013

- URISC Grant, 2011; NSF REU/HHMI Program Participant, Summer 2012

Sierra Wolfenbarger, Spring 2009 – Spring 2010

- Supported by NSF REU/HHMI Program Participant, Summer 2009

Luisa Snyder, Winter 2008 – 2009

- Supported by HHMI Research Grant, Summer 2008; work selected for publication in *The Catalyst* (2009), OSU Undergraduate Research Journal

Nathan Snyder, Spring 2007 – 2009

- Supported by NSF REU/HHMI Program Participant, Summer 2007

Lauren Osborn, Spring – Fall 2005

- Supported by Ernest and Pauline Jaworski Fund for Summer Research Experiences (Summer 2005)

Kathy VanWormer, Fall 2004 – Spring 2005

- Completed Honor's Thesis and graduated, Spring 2005
Malem Gutema, Summer 2004 – Winter 2005
 - Supported by Ernest and Pauline Jaworski Fund for Summer Research Experiences for Underserved Undergraduates in Plant Science
Kory Herrick, Spring 2004 – Winter 2005
 - Supported by NSF REU/HHMI Program Participant, Summer 2004
Jennie Hines, Summer 2003
 - Supported by HHMI Summer Research Grant
Peter Staiger, Summer 2002 – Fall 2002
Delfina Homen, Winter 2002 – Spring 2003
Christine Neou, Summer 2001 – Spring 2003
 - Supported by NSF REU Summer 2002
Elizabeth Pease, Spring 2000 – Summer 2001
Derek Rains, Spring 1998 – Spring 2001
 - Supported by NSF REU 1998; HHMI Summer Research Grant 1999, 2000; URISC grant, Fall 2000
 - Completed Honors Thesis and graduated, Spring 2001
Jessica Fowler, Winter 2000 – Fall 2000
Mariah Baker, Winter 2000 – Spring 2000
Kevin Hicks, Spring 1999
Karla Scott, Fall 1998 – Spring 1999
- Honor's Thesis Committee: Jay Well, Fall 2002
Kristi Barckley, Spring 2002
Alena Pribyl, Spring 1999

POST-DOCTORAL TRAINEES:

- Rex Cole, Spring 2008 – spring 2016
Amy Klocko, Summer 2010 – 2012 (shared with Dr. Valerian Dolja)
Laurel (Lol) Cooper, Summer 2008 – Fall 2010
Maria Ivanchenko, 1998

VISITING SCIENTIST, SPONSOR:

- Dr. Lian Zhou, Southwest University (China), Aug 2018 – July 2019

SENIOR FACULTY RESEARCH ASSISTANT:

- Zuzana Vejlupekova, Winter 1998 – present. Promoted to Senior FRA in 2010.

HIGH SCHOOL OUTREACH:

- Through the 'Apprenticeships in Science & Engineering' program of the Portland, OR-based Saturday Academy (8 week Summer lab internship) (NSF funded the internships)
Students:

- Savannah Van Why, Summer 2013
Ibrahim Moussaoui, Summer 2012
Matthew Moreno, Summer 2011
Samantha McNally, Summer 2010
Bo Park, Summer 2009 – Southridge High School, Beaverton, OR

Emily Harvey, Summer 2008 – Corvallis High School, Corvallis, OR
Zachary Dunn, Summer 2007 – South Albany High School, Albany, OR

Through the Murdock Trust-supported ‘Partners in Science’ program

Teacher:

Renee Cool, Summer 2009, 2010 – Marist High School, Eugene, OR

C. SCHOLARSHIP AND CREATIVE ACTIVITY

1. MAJOR AREAS OF CURRENT RESEARCH:

My primary research interest is in the molecular mechanisms that govern cellular morphogenesis and development in plants. Specifically, I am interested in how the regulation of two cellular processes – cell polarity and exocytosis – is integrated into developmental systems at the organismal scale. My lab is currently using a variety of complementary techniques in genetics, cell biology, molecular biology and (more recently) bioinformatics and ‘omics-scale approaches to investigate these processes. Our focus is on two models: the root of *Arabidopsis thaliana*, including tip-growing root hairs and meristems, and the male gametophyte of *Zea mays*, including germinating pollen and the growing pollen tube. Recently, we have focused on: 1) the role of the eight-protein exocyst complex, which is thought to be involved in vesicle trafficking and exocytosis, and its putative regulators (e.g., ROP GTPases); and 2) using ‘omics approaches to inform a system’s level understanding of pollen development and function. Use of both dicot and monocot models helps insure that our work is relevant across the plant kingdom.

2. PUBLICATIONS:

a. Refereed Journal Articles

Publications after joining OSU:

Warman, C., Fowler, J. (2021) Deep learning-based high-throughput phenotyping can drive future discoveries in plant reproductive biology. *Plant Reproduction* **34**, 81–89, <https://doi.org/10.1007/s00497-021-00407-2>

Warman, C., Sullivan C.M., Preece J., Buchanan M.E., Vejlupkova, Z., Jaiswal P., Fowler, J. (2021) A cost-effective maize ear phenotyping platform enables rapid categorization and quantification of kernels. *The Plant Journal*, <https://onlinelibrary.wiley.com/doi/full/10.1111/tpj.15166>.

Zhou, L., Vejlupkova, Z., Warman, C. & Fowler, J. E. (2021) A maize male gametophyte-specific gene encodes ZmLARP6c1, a potential RNA-binding protein required for competitive pollen tube growth. *Frontiers in Plant Science*, <https://www.frontiersin.org/articles/10.3389/fpls.2021.635244/full>.

Vejlupkova, Z., Cedar Warman, Rita Sharma, Henrik Vibe Scheller, Jenny C. Mortimer, John E. Fowler No evidence for transient transformation via pollen magnetofection in several monocot species. *Nat Plants* 1–2 (2020) doi:10.1038/s41477-020-00798-6.

- Warman, C., Panda, K., Vejlupkova, Z., Hokin, S., Unger-Wallace, E., Cole, R., Chettoor, A., Jiang, D., Vollbrecht, E., Evans, M., Slotkin, R., Fowler, J. (2020). High expression in maize pollen correlates with genetic contributions to pollen fitness as well as with coordinated transcription from neighboring transposable elements. *Plos Genet* **16**, e1008462 (2020). <https://dx.doi.org/10.1371/journal.pgen.1008462>
- Cole RA**, Peremyslov VV, Van Why S[§], Moussaoui I[§], Ketter A*, Cool R, Moreno MA[§], Vejlupkova Z[#], Dolja VV and **Fowler JE**³ (2018). A broadly conserved NERD genetically interacts with the exocyst to affect root growth and cell expansion. *J Exp Bot* **69**, 3625-3637. doi:10.1093/jxb/ery162
- Freeling M, Scanlon MJ, and **Fowler JE**⁷ (2015). Fractionation and subfunctionalization following genome duplications: mechanisms that drive gene content and their consequences. *Curr Opin Genet Dev.* **35**,110-8. doi: 10.1016/j.gde.2015.11.002.
- Peremyslov VV, Cole RA**, **Fowler JE**⁶ and Dolja VV (2015). Myosin-powered membrane compartment drives cytoplasmic streaming, cell expansion and plant development. *PLoS ONE* **10**, e0139331 doi:10.1371/journal.pone.0139331
- Cole RA**, McInally SA[§], and **Fowler JE**³ (2014). Developmentally distinct activities of the exocyst enable rapid cell elongation and determine meristem size during primary root growth in Arabidopsis. *BMC Plant Biol* **14**, 1594. doi:10.1186/s12870-014-0386-0 (Noted as ‘Highly Accessed’ by *BMC Plant Biology*)
- Chettoor AM, Givan SA, Cole RA**, Coker CT, Unger-Wallace E, Vejlupkova Z[#], Vollbrecht E, **Fowler JE**^{4,5} and Evans MMS (2014). Discovery of novel transcripts and gametophytic functions via RNA-seq analysis of maize gametophytic transcriptomes. *Genome Biol* **15**, 414. doi:10.1186/s13059-014-0414-2 (Noted as ‘Highly Accessed’ by *Genome Biology*; published July 2014, 7 citations by June 2015)
- Li L, Eichten SR, Shimizu R, Petsch K, Yeh C-T, Wu W, Chettoor AM, Givan SA, Cole RA**, **Fowler JE**^{4,6}, Evans MMS, Scanlon MJ, Yu J, Schnable, PS, Timmermans MCP, Springer NM, and Muehlbauer GJ, (2014) Genome-wide discovery and characterization of maize long non-coding RNAs, *Genome Biol* **15**, R40. doi:10.1186/gb-2014-15-2-r40 (Noted as ‘Highly Accessed’ by *Genome Biology*; published Feb 2014, 16 citations by June 2015)
- Vukašinić N, Cvrcková F, Eliás M, Cole R**, **Fowler JE**⁶, Zárský V, and Lukás Synek (2014) Dissecting a hidden gene duplication: The Arabidopsis thaliana SEC10 Locus, *PLoS ONE* **9**, e94077 doi:10.1371/journal.pone.0094077
- Drdová EJ, Synek L, Pečenková T, Hála M, Kulich I, **Fowler JE**⁷, Murphy AS, Zárský V (2013) The exocyst complex contributes to PIN auxin efflux carrier recycling and polar auxin transport in Arabidopsis. *Plant J.* doi: 10.1111/tpj.12074 (ISI Web of Science ‘Highly Cited Paper’)

- Peremyslov VV, Klocko AL**, **Fowler JE**⁵ and Dolja VV (2012) Arabidopsis myosin XI-K localizes to the motile endomembrane vesicles associated with F-actin. *Front. Plant Sci.* **3**:184. doi: 10.3389/fpls.2012.00184
- Humphries JA, Vejtlupkova Z[#], Luo A., Meeley RB, Sylvester AW, **Fowler JE**⁶, Smith, L.G. (2011) ROP GTPases act with the receptor-like protein PAN1 to polarize asymmetric division in maize. *Plant Cell* **23**:2273-84
(Highlighted in 'In Brief', a short section in *Plant Cell* noting a few papers of particular interest.)
- Fendrych M, Synek L, Pečenková T, Toupalová H, Cole RA**, Drdová E, Nebesárová J, Šedinová M, Hála M, **Fowler JE**⁶ and Zarsky V. (2010) The *Arabidopsis* exocyst complex is involved in cytokinesis and cell plate maturation. *Plant Cell* **22**: 3053-65.
- Kulich I, Cole RA**, Drdova E, Cvrckova F, Soukup A, **Fowler J**⁵, Zarsky, V. (2010) *Arabidopsis* exocyst subunits SEC8 and EXO70A1 and exocyst interactor ROH1 are involved in the localized deposition of seed coat pectin. *New Phytol.* **188**: 615-25.
- Hála M, Cole. R.A.* , Synek L., Drdová E., Pecenkova, T., Nordheim, A., Lamkemeyer, T., Madlung, J., Hochholdinger, F., **Fowler JE**⁵ and Zársky, V. (2008) An exocyst complex functions in plant cell growth in *Arabidopsis* and tobacco. *Plant Cell* **20**: 1330-1345.
(Highlighted in 'In Brief', a short section in *Plant Cell* noting a few papers of particular interest. ISI Web of Science 'Highly Cited Paper')
- Cole, R.A.* and **Fowler, J.E.**³ (2006) Polarized growth: maintaining focus on the tip. *Curr Opin Plant Biol.* **2006** 9:579-88.
(ISI Web of Science 'Highly Cited Paper')
- Williams, P., Hardeman, K., **Fowler, J.**⁶, and Rivin, C. (2006) Divergence of duplicated genes in maize: evolution of contrasting targeting information for enzymes in the porphyrin pathway. *Plant J.* **45**:727-39.
- Cole, R.A.* , Synek, L., Zarsky, V. and **Fowler, J.E.**³ (2005) SEC8, A subunit of the putative Arabidopsis exocyst complex, facilitates pollen germination and competitive pollen tube growth. *Plant Physiol.*, **138**: 2005-2018. ##
(Highlighted in 'On the Inside', a short column in each issue of *Plant Physiology* noting a few papers of particular interest.)
- Fowler, J.E.**¹, Vejtlupkova, Z.[#], Goodner, B.W., Lu G. and Quatrano, R.S. (2004) Localization to the rhizoid tip implicates a *Fucus distichus* Rho family GTPase in a conserved cell polarity pathway. *Planta*, **219**: 856-66.
- Arthur, K.M.* , Vejtlupkova, Z.[#], Meeley, R.B. and **Fowler, J.E.**³ (2003) The maize ROP2 GTPase provides a competitive advantage to the male gametophyte. *Genetics*, **165**: 2137-2151.
- Christensen, T.M.* , Vejtlupkova, Z.[#], Sharma, Y.K., Arthur, K.M.* , Spatafora, J.W., Albright,

- C.[§], Duvick, J.P., Quatrano, R.S. and **Fowler, J.E.**³ (2003) Conserved subgroups and developmental regulation in the monocot *rop* gene family. *Plant Physiol.*, 133:1791-1808.
- Ivanchenko, M.***, Vejlupkova, Z.[#], Quatrano, R.S. and **Fowler, J.E.**³ (2000). Maize ROP7 GTPase contains a unique, CaaX box-independent plasma membrane targeting signal. *Plant J.* 24: 79-90.
- ***Muehlbauer, G.J., *****Fowler, J.E.**², Girard, L., Tyers, R., Harper, L. and Freeling, M. (1999). Ectopic expression of the maize homeobox gene *liguleless3* alters cell fates in the leaf. *Plant Physiol.* 119:651-62.

Publications prior to joining OSU:

- Fowler, J.E.**¹ and Quatrano, R.S. (1997). Plant cell morphogenesis: plasma membrane interactions with the cytoskeleton and cell wall. *Annu. Rev. Cell Dev. Biology* 13: 697-743.
- Muehlbauer, G.J., **Fowler, J.E.**⁷ and Freeling, M. (1997). Sectors expressing the homeobox gene *liguleless3* implicate a time-dependent mechanism for cell fate acquisition along the proximal-distal axis of the maize leaf. *Development* 124: 5097-5106.
- *****Fowler, J.E.**², ***Muehlbauer, G.J. and Freeling, M. (1996). Mosaic analysis of the *Liguleless3* mutant phenotype in maize by coordinate suppression of *Mutator*-insertion alleles. *Genetics* 143: 489-503.
- Fowler, J.E.**¹ and Freeling, M. (1996). Genetic analysis of mutations that alter cell fates in maize leaves: dominant *Liguleless* mutations. *Dev. Genet.* 18: 198-222.
- Fowler, J.E.**¹ and R.S. Quatrano. (1995). Cell polarity, asymmetric division, and cell fate determination in brown algal zygotes. *Seminars in Developmental Biology* 6: 347-358.
- ***Equal contributions as first authors

b. Technical Reports and Preprints Posted (not refereed)

- Wing KM, Hamilton BL, Kayes LJ, **Fowler JE** (2018). Using *Zea mays* pollen to introduce undergraduate students to the dynamic development of pollen tubes within an Introductory Biology laboratory curriculum. *Maize Genetics Cooperation Newsletter* 92, <https://mnl.maizegdb.org/92/pdf/03Wing.pdf>
- Fowler, J.**¹ (2003). A gametophyte factor on chromosome 9 affects both male and female gametophytes. *Maize Genetics Cooperation Newsletter* 77:26-27
- Vejlupkova, Z[#] and **Fowler, J.**³ (2003). A simple, high-throughput method of DNA extraction for maize using the Matrix Mill. *Maize Genetics Cooperation Newsletter* 77:25-27

- Vejlupkova, Z[#] and **Fowler, J.**³ (2003). Maize DNA preps for undergraduate students: a robust method for PCR genotyping. *Maize Genetics Cooperation Newsletter* 77:24-25
- Chi, Y, **Fowler, J.**⁷ and Freeling, M. (1994). The *lg3* locus maps to the short arm of chromosome 3. *Maize Genetics Cooperation Newsletter* 68:16
- Chan, TJ, **Fowler, J.**⁷ and Freeling, M. (1992). Mapping *Lg3* using RFLP's. *Maize Genetics Cooperation Newsletter* 66:21
- Fowler, J.**¹ and Freeling, M. (1991). *Liguleless4*, a new dominant mutation that alters the sheath-blade boundary in maize leaves. *Maize Genetics Cooperation Newsletter* 65:30-31
- Vogel, JM, **Fowler, J.**⁷ and Freeling, M. (1989). Detailed analysis of the aerobic and anaerobic tissue distribution of ADH1 activity in the primary root. *Maize Genetics Cooperation Newsletter* 63:35-36

c. Chapters in Books

- Li L, Muehlbauer GJ, **Fowler JE**⁷, and Evans, MMS (2019). RNA isolation and analysis of lncRNAs from gametophytes of maize. In: Chekanova J.A., Wang H.L.V. (eds) Plant Long Non-Coding RNAs. *Methods in Molecular Biology*, vol 1933. Humana Press, New York, NY - https://doi.org/10.1007/978-1-4939-9045-0_4
- Fowler, J.E.**¹ (2010) Evolution of the ROP GTPase signaling module. In *Integrated G Proteins Signaling in Plants*, Yalovsky, S., Baluska, F. and Jones, A. (eds.), Springer, New York, pp. 305-327.
- Bedinger, P. and **Fowler, J.E.**² (2009) The maize male gametophyte. In *The Maize Handbook: Its Biology*, S. Hake, J. Bennetzen (eds), Springer-Verlag, p. 57-77.
- Zarsky, V. and **Fowler, J.E.**⁷ (2009) ROP (Rho-Related Protein from Plants) GTPases for Spatial Control of Root Hair Morphogenesis. In *Root Hairs*, A.M. Emons, T. Ketelaar (eds), Springer-Verlag, p.191-209.
- Fowler, J.E.**¹ Cell polarity in algae and vascular plants. (2000). In *Frontiers in Molecular Biology: Cell Polarity*, Drubin, D. (ed), pp. 141 - 180. Oxford University Press, New York
- Freeling, M. and **Fowler, J.E.**⁷ (1994). A nine step way to characterize a morphological mutant. In *The Maize Handbook*, Freeling, M. and Walbot, V. (eds.). pp. 209-211. Springer-Verlag, New York.

e. Patents

- NOVEL SYSTEM TO QUANTIFY MAIZE SEED PHENOTYPES, (2021) C Warman, JE Fowler - US Patent App. 17/195,446

f. Abstracts of Presentations at Professional Meetings since last promotion

- Colebrook S[§], Unger-Wallace E, Vollbrecht E, and **Fowler JE³**. (2015) Male gametophyte-specific expression helps identify a conserved gene associated with increased pollen fitness. *Maize Genetics Conference Abstracts* 56:P182
- Smyth J*, Vejlupkova Z[#], Cooper L**, Walley J, Shen Z, Smith L, Briggs S, and **Fowler JE³**. (2015) Proteomic profiling suggests translational control is a key component of pollen tube germination in maize. *Maize Genetics Conference Abstracts* 56:P193
- Fowler JE³**, Vejlupkova Z[#], Cole R, Shen Z, Smith L, and Briggs S. (2014) Proteomic analyses suggest control of protein translation and stability is a key facet of pollen tube germination in maize. *Plant Biology 2014 Abstracts*: P32014-B
- Smyth J* and **Fowler JE³**. (2014) Teasing out the transcriptome of *in vivo* germinated pollen. *Maize Genetics Conference Abstracts* 55:P129
- Chettoor AM, Cole RA**, Givan SA, Coker CT, Unger-Wallace E, Vejlupkova Z[#], Nelson WM, Vollbrecht E, **Fowler JE^{4,5}**, and Evans MMS. (2013) RNA-seq analysis of maize gametophytic transcriptomes. *Maize Genetics Conference Abstracts* 54:P53
- Lai NI[§], Smyth JC*, Ivanchenko MG, Boyd AE, Sullivan CM, and **Fowler JE³**. (2012) A bioinformatic pipeline to identify transposon flanking sequences via high-throughput sequencing. *Maize Genetics Conference Abstracts* 54:P239
- Cooper LD**, Vejlupkova Z[#], Elser J, Dharmawardhana P, Jaiswal P, Watrud LS, and **Fowler JE³**. (2011) Pollen germination in maize does not require changes in the transcriptome. *Maize Genetics Conference Abstracts* 53:P128
- Cole RA** and **Fowler JE³**. (2011) Meristematic growth zones are altered in exocyst mutants to affect Arabidopsis root growth. 22nd International Conference on Arabidopsis Research, Abstracts: P385
- Fendrych M, Synek L, Hala M, Pecenkova T, Toupalova H, Cole R**, **Fowler JE⁶**, and Zarsky V. (2011) The exocyst complex in cytokinesis of the plant cell. 22nd International Conference on Arabidopsis Research, Abstracts: P329
- Klocko A**, Dolja V, and **Fowler JE³**. (2011) Testing for interaction between the exocyst complex and Myosin XI family members in cell expansion. 22nd International Conference on Arabidopsis Research, Abstracts: P304
- Cooper L**, Vejlupkova Z[#], Elser J, Jaiswal P, Watrud L, and **Fowler JE³**. (2010) Surprises in the maize pollen transcriptome: Developmental similarities and inbred differences. *Plant Biology 2010*, Abstracts: P04032

- Cole RA**, Park B^s, Auger DL, **Fowler JE**^{4,5}, Chettoor AM, and Evans MMS. (2010) Mechanisms underlying reduced transmission of B-A chromosome segments from tertiary trisomic stocks. *Maize Genetics Conference Abstracts* 52:P46
- Evans MMS, Auger DL, Beck K, Coker CT, Cole RA**, **Fowler JE**^{4,5}, Givan SA, Phillips AR, Unger-Wallace E, and Vejlupkova Z[#]. (2009) Functional genomics of maize gametophytes. *Maize Genetics Conference Abstracts* 51:P143
- Phillips AR, Beck K, Cun T, **Fowler JE**^{4,5}, Givan SA, Patel A, Vejlupkova Z[#], and Evans MMS. (2009) A new outreach program trains undergraduate students to mentor and teach plant biology to high school students. *Maize Genetics Conference Abstracts* 51:P238
- Zarsky V, Cole R**, Drdova E, Kulich I, Fendrych M, Hala M, Synek L, Pecenkova T, Toupalova H, Potocky M, Cvrckova F, and **Fowler JE**⁵. (2009) Angiosperm exocyst participates in cell division, growth and differentiation. *Plant Biology 2009, Abstracts: P53009*
- Fowler JE**¹, Vejlupkova Z[#], Qu A, and Watrud LS. (2008) Variation in pollen competitive ability in diverse maize lines. *Maize Genetics Conference Abstracts* 50:P223
- Carroll KA**, Kulhanek D, **Fowler JE**⁵, and Rivin C. (2007) Regulatory circuits in maize embryo development: ABA, GA and the ROP GTPases. *Maize Genetics Conference Abstracts* 49:T30
- Zarsky V, Cole R**, Synek L, Hala, M, and **Fowler JE**⁵. (2006) Arabidopsis SEC6, SEC8 and SEC15 homologues are involved in pollen function and are part of a high molecular complex along with some other exocyst subunits. *Plant Biology 2006, Abstracts: P20038*
- Fowler JE**¹. (2006) Characterization of the maize pollen transcriptome. *Plant Biology 2006, Abstracts: P31037*
- Cole RA and **Fowler JE**³. (2005) A member of the putative Arabidopsis exocyst complex facilitates pollen germination and competitive pollen tube growth. *Plant Biology 2005, Abstracts: 717*

g. Online Databases

Maize Gametophyte Project (www.maizegametophyte.org) website, Genome Browser and RNA-Seq data for the NSF-supported Plant Genome Project “Genetic and epigenetic regulation of gametophyte development and transposon expression in maize”, P.I., M. Evans (Carnegie Institute). Bioinformatics Co-P.I., J. Fowler: responsibility for maintaining the website, hosting on an OSU-based server, and eventual deposition of data at the centralized MaizeGDB database.

3. INVITED TALKS AT PROFESSIONAL MEETINGS AND SEMINARS:

a. International Audiences

Invitation to Chair Pollen Biology Minisymposium and speak at Plant Biology 2014, Portland, OR, July 2014 - "Proteomic analyses suggest control of protein translation and stability is a key facet of pollen tube germination in maize"

Invitation to speak at Plant Biology 2010, Montreal, Canada, July 2010, Pollen Biology Minisymposium - **Dr. Laurel Cooper, former postdoc in the lab** - "Surprises in the Maize Pollen Transcriptome: Developmental Similarities and Inbred Differences"

Invitation to speak at Frontiers in Sexual Plant Reproduction III Conference, Tucson, AZ, October 2008 - "Diversity and Conservation in Maize Pollen: Phenotypes and Transcripts"

Invitation to speak at Keystone Symposium on Plant Cell Biology, March 2007 - "Biochemical, cell biological and genetic evidence for a plant exocyst complex with functions in plant cell morphogenesis"

Invitation to speak at Plant Biology 2005 (ASPB Meeting), Reproductive Development Minisymposium - **Rex Cole (graduate student) gave the talk in my place** - A Member of the Putative *Arabidopsis* Exocyst Complex facilitates Pollen Germination and Competitive Pollen Tube Growth

Invitation to speak at Frontiers in Sexual Plant Reproduction II Conference, Albany, NY, October 2004 - "Differential Roles for the Duplicate Genes *rop2* and *rop9* in the Maize Pollen Tube: Germination vs. Growth?"

Invitation to speak at 45th Annual Maize Genetics Conference, Lake Geneva WI, March 2003 - "A Role for Maize ROP2 GTPase in the Male Gametophyte"

Invitation to speak at 34th Annual Maize Genetics Conference, Asilomar, CA, March 1992. "Genetic and Molecular Analysis of Dominant Leaf Mutations"

b. National and Regional Audiences

Cell Polarity and Small GTPases in Plants -- FASEB Summer Research Conference: Mechanisms in Plant Development, Saxtons River, VT, August 1998. *Also served as session chair.

Cell Polarity in Plants, Fungi and Animals: A Conserved Role for Small GTPases? -- 31st Annual Northwest Regional Developmental Biology Conference, Friday Harbor, WA, March 1998.

c. Departmental Audiences

The Non-Mendelian Genetics of Pollen Function: Adding Digital Imaging and Computer Vision to the Toolkit – Miami University of Ohio, Biology Department, Nov 2020

The Easiest Numbers in Biology: What Can We Learn When Mendel is Wrong? - Oregon State University, Corvallis, OR, Department of Botany and Plant Pathology, May 2020

Where Can Pollen Take You?: Developmental Transitions in Arabidopsis and Maize - Oregon State University, Corvallis, OR, Department of Botany and Plant Pathology, May 2015

Pollen Biology: What's that Haploid Doing in My Diploid? – University of Georgia, Department of Plant Biology, October 2014

Pollen Biology: What's that Haploid Doing in My Diploid? - Iowa State University, Ames, IA, Department of Genetics, Development and Cell Biology, March 2014

Pollen Biology: A Tale of Two Plants - Oregon State University, Corvallis, OR, Department of Botany and Plant Pathology, May 2010

Tales of the Unexpected: From Maize Pollen to Arabidopsis Roots – Oregon State University, Corvallis, OR, Department of Horticulture, April 2008

ROP GTPases and the Exocyst Complex: Developmental Roles in Two Model Plants – Center for Plant Cell Biology, UC. Riverside, July 2007

A Focus on the Tip: Pollen and Polarized Cell Growth in Two Model Plants – Institute for Experimental Botany, Czech Academy of Sciences, Prague, Czech Republic, July 2007

A Focus on the Tip: Pollen and Polarized Cell Growth in Two Model Plants – University of Arkansas, Dept. of Biological Sciences, July 2007

Post-Pollination Development of the Male Gametophyte: Genetic Approaches in a Monocot and a Dicot Model – Oregon State University, Corvallis, OR, Department of Horticulture, February 2005

The Rop GTPase Family: Diverse Roles in Plant Signaling – Oregon State University, Corvallis, OR, Department of Botany and Plant Biology, June 2003

Investigating Plant Cells using Genetics and Molecular Biology – Willamette University, Salem, OR, Department of Biology, November 2002

A Genetic Approach to Studying Rop Small GTPases in Plant Development – University of California at Davis, Plant Biology Graduate Group Seminar, Davis, CA, April 2002

A Novel Plasma Membrane Targeting Mechanism in Higher Plants – OSU Center for Gene Research and Biotechnology Annual Retreat, Newport, OR, September 1999

Small GTPases and Cell Polarity in Plants -- Cell and Developmental Biology Journal Club,
Institute of Molecular Biology, University of Oregon, Eugene, OR, January 1998.

Small GTPases and Plant Cell Polarity-- Oregon State University, Corvallis, OR, Center for Gene
Research and Biotechnology, July 1996

4. GRANT AND CONTRACT SUPPORT:

Since to promotion to Professor (2016)

Total to OSU, including those as Co-PI: \$1,808,219; total of primary awards: \$1,808,219

Prior to promotion to Professor

Total to OSU, including those as Co-PI: \$4,906,031; total of primary awards: \$12,030,646

Prior to promotion to Associate Professor

Total to OSU, including those as Co-PI: \$1,053,622; total of primary awards: \$1,053,622

a. Current Support

National Science Foundation, Plant Genome Research Project (2021-2025); \$1,508,219 to OSU,
PI; Co-P.I.'s: Megraw (BPP), Jiang (Statistics); RESEARCH-PGR: Predicting Gene-
Specific Functional Contributions to Maize Reproduction: A Machine-Learning
Approach

a. Past Support

National Science Foundation (2018-2021); \$300,000 to OSU; P.I.; EAGER: A Transformative
Technology for Producing Transgenic Maize: Pollen Magnetofection. Co-P.I., Kelly
Dawe, University of Georgia.

National Science Foundation, Plant Genome Research Project (2014-2020); \$841,018 to OSU;
Co-P.I.; Genetic & epigenetic regulation of gametophyte development and transposon
expression in maize. Multi-Institutional Collaborative Project – total primary award
\$4,189,994 - P.I. Matt Evans, Carnegie Institute (Stanford, CA); Co-P.I.'s, Erik
Vollbrecht, Iowa State University (Ames, IA); Co-P.I., Don Auger, South Dakota State
University (Brookings, SD); Co-P.I., Keith Slotkin, Ohio State University (Columbus,
OH)

USDA/NIFA (2013-2016); \$188,486 to OSU; P.I.; Multi-Institutional Collaborative Project -
total primary award - \$500,000; Testing Computational Predictions on a Genome Scale:
Regulatory Elements and Genes that Form Tip-Growth Networks in Monocots. Co-P.I.'s
M. Freeling (UC Berkeley), M. Scanlon (Cornell)

National Science Foundation, Major Research Instrumentation (2013-2014); \$560,748; Co-P.I.;

Acquisition of Confocal and Two-Photon Excitation Microscope. P.I. Brett Tyler (Director of the Center for Genome Research and Biocomputing, which houses and has responsibility for the instrument); Co-P.I.'s J. Greenwood, B. Taylor, V. Weis (OSU)

National Science Foundation (2013-2014); \$139,999; P.I.; Co-PI, Valerian Dolja (OSU BPP); Exocyst-Mediated Pathways to the Plant Cell Surface

National Science Foundation (2012); \$6000; P.I.; Research Experiences for Undergraduates Supplement to 'The Exocyst and Vesicle Trafficking in Plant Development'

National Science Foundation (2011-2012); \$34,700 (none to OSU, all for conference support); Co-PI; P. McSteen, University of Missouri, PI; 54th Annual Maize Genetics Conference

National Science Foundation (2009-2012); \$440,415**; P.I.; The Exocyst and Vesicle Trafficking in Plant Development

** Includes an additional \$20,000 to support an international collaboration with Dr. V. Zarsky, Charles University, Czech Republic

National Science Foundation (2009); \$6,599; P.I.; Research Experiences for Undergraduates Supplement to 'Functional Genomics of Maize Gametophytes'

National Science Foundation (2009); \$3,240; P.I.; Research Assistantships for High School Students Supplement to 'Functional Genomics of Maize Gametophytes'

M.J. Murdock Charitable Trust, Partners in Science Program (2009-2011); \$15,000; P.I., Identification of Genes Important for Root Growth in the Model Plant *Arabidopsis thaliana*. Outreach grant to fund two summers of research for a high school teacher (Ms. Renee Cool)

National Science Foundation (2008); \$3,250; P.I.; Research Assistantships for High School Students Supplement to 'Rho GTPases in Plant Development: A Genetic and Cell Biological Analysis'

National Science Foundation, Plant Genome Research Project (2007-2012); \$1,351,560 *; Co-P.I., Functional Genomics of Maize Gametophytes; *OSU subcontract, out of a Multi-Institutional Collaborative Project grant – total primary award for project \$4,755,985 - P.I. Matt Evans, Carnegie Institute (Stanford, CA); Co-P.I.'s, Scott Givan (OSU BPP); Erik Vollbrecht, Iowa State University (Ames, IA); Don Auger, South Dakota State University (Brookings, SD)

EPA Cooperative Agreement (2005-2008); \$298,730; P.I., with Annie Qu (OSU Statistics) as Co-P.I.; Indicators of Fitness in the Maize Pollen Transcriptome: A Screen for Correlation between Gene Expression and Pollen Competitive Ability

USDA-NRICGP (2005-2008); \$359,710; Co-P.I. with P.I. Carol Rivin (OSU BPP); Regulatory Circuits in Maize Embryo Development: ABA, GA and the ROP GTPases

National Science Foundation (2004-2008); \$410,276**; P.I.; Role of Rop GTPases in Signaling during Male Gametophyte Development

** Includes an additional \$35,276 (from a supplemental funding request) to support an international collaboration with Dr. V. Zarsky, Charles University, Czech Republic

National Science Foundation (2004-2005); \$6,000; P.I.; Research Experiences for Undergraduates Supplement to Rho GTPases in Plant Development: A Genetic and Cell Biological Analysis

National Institutes of Health – NCRR Shared Instrumentation Grant (2003); \$370,430; Co-P.I. with Jim Carrington (P.I.); Zeiss LSM 510 META Confocal Microscope; Dr. Carrington was then Director of the Center for Genome Research and Biocomputing (CGRB); I provided a major portion of the organizational work and written justification for the proposal, and also coordinated testing and purchasing of the equipment.

OSU Research Office – Research Equipment Reserves Fund (2001); \$3195; P.I.; Acquisition of Harvester Technology, Inc. Matrix Mill for high-throughput plant DNA preparation

National Science Foundation (2001-2004); \$330,000; P.I.; Rho GTPases in Plant Development: A Genetic and Cell Biological Analysis

National Science Foundation (2002-2003); \$5,000; P.I.; Research Experiences for Undergraduates Supplement to Rho GTPases in Plant Development: A Genetic and Cell Biological Analysis

USDA-NRICGP (1998-2001); \$90,000; P.I.; Rho Family GTPases in Plant Development: A Genetic and Cell Biological Analysis

OSU Research Office (2000); \$4,000; Faculty Teaching Release Grant -- \$4000 (Release from teaching BI 101, Fall 2000)

National Science Foundation (1998-1999); \$35,000; P.I.; Mechanism of Establishment of Cellular Polarity in the Brown Alga *Fucus* (Special Starter Grant associated with NSF Postdoctoral Fellowship in Plant Biology)

National Science Foundation (1998-1999); \$5,000; P.I.; Research Experiences for Undergraduates Supplement to Mechanism of Establishment of Cellular Polarity in the Brown Alga *Fucus*

OSU Research Office (2000); \$500; P.I.; URISC Undergraduate Research Project Support for Characterization of a Putative Calcium-binding Protein from *Fucus*

Office of Naval Research (1998); \$210,497; Co-P.I. with Phil McFadden (P.I.) and Dahong Zhang (Co-P.I.); Instrumentation for the Center for Cellular Mechanics; Dr. McFadden, in the Biochemistry and Biophysics Department, controlled the entire budget for purchase

of advanced microscopy equipment, but acted based on input from his Co-P.I.'s. I made significant contributions to the writing of the grant proposal.

5. COLLABORATIONS

Active Collaborations:

Molly Megraw, Botany and Plant Pathology; Duo Jiang, Statistics; Oregon State University (2020 – present): Predicting Gene-Specific Functional Contributions to Maize Reproduction: A Machine-Learning Approach

Matt Evans, Carnegie Institution; Erik Vollbrecht, Iowa State University; Don Auger, South Dakota State University; Keith Slotkin, Ohio State University (2007 – present): Functional genomics and epigenetics of maize gametophytes

Past Collaborations:

Pankaj Jaiswal, Botany and Plant Pathology, Oregon State University (2009 – 2021): Computational analysis of maize pollen transcriptomes & computer vision of ear images
Michael Freeling, UC Berkeley; Michael Scanlon, Cornell (2012-2018): Testing computational predictions on a genome scale: regulatory elements and genes that form tip-growth networks in monocots

Valerian Dolja, Botany and Plant Pathology, Oregon State University (2010 – 2017): Functional interactions between the exocyst and myosins in plant cell growth

Viktor Zarsky, Charles University and Institute for Experimental Botany, Prague, Czech Republic (2003 – 2016): Characterization of the plant exocyst function **Supported by additional funding from the National Science Foundation

Laurie Smith, Department of Biology, University of California at San Diego (2002-2011): Role of Rop GTPases in morphogenesis of maize leaf cells

Carol Rivin, Department of Botany and Plant Pathology, Oregon State University (1999-2011): ROP Functions in ABA and GA signaling during maize embryogenesis

6. OTHER CREATIVE ACTIVITY

Leadership Development:

Participant, Cohort 4, OSU Leadership Development Program for Executives (LDPE), Fall 2017 – Summer 2018

Sabbatical:

Investigation of the Maize Pollen Transcriptome, and the Role of Pollen as a Vector for Transgene Flow, National Research Council Associateship at the Corvallis Western Ecology Division EPA Lab, 2005-2006, Dr. Lidia Watrud, sponsor

Hosted on sabbatical:

Professor Darryl Kropf (Fall 2002), Department of Biology, University of Utah, Project:
Transient transformation of brown algal zygotes

D. SERVICE

1. UNIVERSITY SERVICE

University Committees:

Post-Tenure Review Committee, Environmental & Molecular Toxicology (outside member) – Spring-Fall 2020
Co-Chair (with Brett Tyler, CGRB Director) – rMCB Visioning Group, Fall 2018 – Spring 2020
Review Panel, OSU Graduate School Diversity Recruitment Awards – Winter 2019
Co-Chair (with David Maddison, IB) - The ‘G6’ : Joint BPP/IB Committee for Programming in the New Cordley Remodel – Fall 2017-Summer 2018
Review panel, OSU Graduate School Travel Awards – Spring 2015
OSU Institutional Biosafety Committee – Fall 2004 – Spring 2013
including Ad hoc work generating Transgenic Plant Biosafety forms
OSU Faculty Senate – Winter 2008 – Fall 2010
Search Committee, Molecular and Cellular Biology Program Director – Spring 2007 – Fall 2007

College Committees:

CAS Associate Dean of Academics Search Committee – Spring-Summer 2020
College of Agricultural Sciences GMO Committee – Winter 2014 - 2016
Generated series of informational ‘white papers’ on GMO issues, coincident with statewide vote on GMO labeling; made available to the public
Search Committee, Assistant Professor in Plant Genomics & Bioinformatics, Horticulture Department, College of Agricultural Sciences – Winter 2015

Department, Program and Center Committees:

Search Committee Chair, Assistant Professor in Plant Biology – Winter 2019 – present
BPP Ecampus Committee, Fall 2018 - present
BPP Curriculum Committee, Fall 2018 - present
BPP Strategic Planning Subcommittee, Co-Chair, Inclusion and Excellence, Winter 2019
BPP Graduate Studies Committee, Chair – Summer 2007 – Summer 2011;
Summer 2012 – Fall 2017
BPP Executive Committee – Summer 2007- present
BPP Curriculum Committee, 2005-2006, 2009-2010
Center for Gene Research and Biotechnology Confocal Microscope Oversight Committee, Winter 2003 – present
Molecular and Cellular Biology Curriculum Committee, Winter 1999 - present
Plant Sciences Curriculum Committee, Chair – Winter -Spring 2007
Center for Gene Research and Biotechnology – Scientific Advisory Board, Fall 2001 - 2003
BPP Chairperson's Advisory Committee, Fall 2001 – Summer 2002

BPP Computer Committee, Fall 2001 – Summer 2002
MCB & Genetics Graduate Admissions Committee, 1998 - 2005
BPP Graduate Studies Committee, Fall 1997 - Spring 2001
BPP Ad hoc Curriculum Review Committee, Fall 2000 - Spring 2001
 Chair, Plant Molecular Biology Courses Subcommittee
BPP Seminar Committee, Winter - Spring 2000
Advisor, Botany and Plant Pathology Undergraduate Club, Summer 1998 - Spring 2000
BPP Departmental Review Committees, Winter - Spring 1999:
 Graduate Studies
 Plant Structure and Function

2. SERVICE TO THE PROFESSION

International Committee and Organization Service:

Chair, Committee for Outreach, Diversity, Inclusion and Education of the Maize Genetics Cooperation, Spring 2021 – present; Member, Summer 2020 - present
Member, Maize Genetics Conference Steering Committee (organizes Annual Maize Genetics Conference, ~500 attendees), 2010 – 2013
Chair, 54th Annual Maize Genetics Conference, Portland, OR, March 2012
 Coordinated program and venue selection
 Wrote NSF proposal to obtain funding (\$34,700) to support student participation
 Initiated MaGNET program to provide full support for conference attendance by members of underserved populations – continued annually to the present

Professional Society Memberships:

American Society of Plant Biologists
Maize Genetics Cooperation
Genetics Society of America

Proposal Review Panels:

National Science Foundation, Plant and Microbial Development Panel, Fall 2005, Spring 2021
National Science Foundation, Plant Genome Research Program Panel, Summer 2015, October 2019
USDA NRI Developmental Processes of Crop Plants Panel, Summer 2006, Summer 2009

Proposal Reviews (total number):

National Science Foundation *ad hoc* reviews, 2001-17 (15)
European Union ERA-CAPS Program *ad hoc* review, 2017 (1)
National Institutes of Health, Vector Biology Section, 2008 (1)
USDA NRI Competitive Grants Program, 1996-2005 (8).
Israel Science Foundation, 2002, 2006 (2).
Human Frontier Science Program, 2001 (1).
Department of Energy, Partnerships for Academic-Industrial Research, 1998 (1).

Manuscript Reviews (Total number per journal):

Science, 2021 (1)
Plant Physiology, 1998-2021 (18)
Journal of Cell Biology, 2020 (1)
Frontiers in Plant Science, 2014-2020 (6)
Plant Communications, 2020 (1)
Journal of Experimental Botany, 2019 (1)
The Plant Journal, 2000 - 2019 (6)
New Phytologist, 2012-18 (4)
Molecular Biology of the Cell, 2005, 2015 (2)
Genes, Genomes, Genetics, 2014 (1)
PLOS ONE, 2013, 2014 (2)
Molecular Plant 2009-2013 (2)
The Plant Cell, 1999 – 2012 (14)
Trends in Cell Biology, 2012 (1)
Development, 2012 (1)
Molecular Reproduction and Development, 2012 (2)
PNAS, 2007, 2010 (2)
Current Biology, 2007-2009 (3)
Journal of Integrative Plant Biology, 2009 (1)
Plant Molecular Biology, 2007 (1)
Journal of Plant Physiology, 2007 (1)
Plant and Cell Physiology, 2007 (1)
Journal of Integrative Plant Biology, 2007 (1)
Plant Science, 2005 (1)
Journal of Heredity, 2005 (1)
Genetics, 2003-2017 (3)
Biochimie, 2004 (1)
Trends in Plant Science, 2000 (1)

3. PROFESSIONALLY-RELATED SERVICE TO THE PUBLIC

Presenter, ‘DNA Camp’ Summer Program for STEM Outreach, 2017 - 2019

Co-Lead Presenter with J. Chang, “Biology, Mutants, GMOs, and Big Data - The History of Food” – ASE Midsummer Conference, July 2018

Lead Presenter, “Fluorescence Microscopy Illuminates the Complexity of Living Cells” – ASE Midsummer Conference, July 2015

Generated science-based information on GMOs in Agriculture (see College Service and Public Outreach) – 2014

Apprenticeships in Science and Engineering Program mentor – hosted 8-week high school student internships; Chaired sessions of student oral presentations at the program’s final research Symposium in Portland – 2007-2013

‘Corn Science’ interactive activity at Garfield Elementary School (Title I – low income, high proportion underserved population) – 40-65 K-3rd grade students each year – 2007-2012

4. PUBLIC OUTREACH

Newspapers and magazines: The informational set of ‘white papers’ generated by an Agricultural Sciences faculty committee on genetically engineered crops was highlighted by two of OSU’s research magazines, *Terra* and *Oregon’s Agricultural Progress*:
<http://oregonstate.edu/terra/2015/05/gmos-in-agriculture/>
<http://oregonprogress.oregonstate.edu/winter-2015/examining-genetically-engineered-crops-many-angles>

E. AWARDS

National:

National Research Council Senior Research Associateship (Sabbatical), 2005-2006
NSF Postdoctoral Fellowship in Plant Biology, 1994 - 1997.
Howard Hughes Medical Institute Predoctoral Fellowship in Biological Sciences, 1988-1993.
National Merit Scholar. 1983 - 1987.
National Honor Societies:
 Phi Beta Kappa
 Phi Kappa Phi

University:

Loyd Carter Award for Excellence in Teaching (Graduate), College of Science. Oregon State University. 2003.
Outstanding Graduate Student Instructor, Genetics. U.C., Berkeley. 1989.
Foundation Fellowship, University of Georgia. Full academic scholarship. 1983 - 1987.